

# 1 Phase statistics

This item can be selected to compute the volume pixel counts and surface pixel counts of each phase present in any 3-D microstructure. This menu selection can be employed after any step during the creation of an initial microstructure, after hydration of an initial microstructure, or after degradation/leaching of a hydrated microstructure. To use this selection, the user need only supply the name of the 3-D microstructure image file to be analyzed. Within a couple minutes of submitting the form, a table of the volume and surface counts, such as that shown in Figure 2, will be displayed. Incidentally, compare the values for the clinker compounds in Figure 2 with the target values specified for this microstructure in Fig 1. In general, the target values will be matched by the distribution program to within 1–2 %.

Random number seed (negative integer):

Filename of original microstructure:

Filename of the final microstructure:   
(No file extension---.img will be added)

**Phase volume and surface fractions for the cement being generated:**

Phase	Volume fraction	Surface area fraction
C <sub>3</sub> S	<input type="text" value="0.6865"/>	<input type="text" value="0.6878"/>
C <sub>2</sub> S	<input type="text" value="0.1611"/>	<input type="text" value="0.1195"/>
C <sub>3</sub> A	<input type="text" value="0.0813"/>	<input type="text" value="0.1107"/>
C <sub>4</sub> AF	<input type="text" value="0.0711"/>	<input type="text" value="0.0820"/>

E-mail address:

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**You will be e-mailed at the above address when execution is complete.**

**Figure 1:** Form for distributing cement phases amongst cement particles in a 3-D microstructure image.

## References

### Phase Statistics for **cem140wc40a.img**

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Phase	Phase ID	Volume Count	Surface Count	Volume Fraction	Surface Fraction	Mass Fraction
Porosity	0	642027	0			
C <sub>3</sub> S	1	230897	234166	0.68617	0.68812	0.67875
C <sub>2</sub> S	2	54750	40255	0.16270	0.11829	0.16474
C <sub>3</sub> A	3	27178	38095	0.08077	0.11195	0.07554
C <sub>4</sub> AF	4	23677	27783	0.07036	0.08164	0.08098
<b>Total</b>		336502	340299			
Gypsum	5	21471	14569			
Hemihyd.	6	0	0			
Anhydrite	7	0	0			
Pozzolan	8	0	0			

**Figure 2:** Phase statistics table generated using the **Phase statistics** submenu.